REMARKS

Applicants respectfully request favorable reconsideration of the above-captioned application as amended.

By this amendment, claims 1-30 are presented for examination. Claims 1 and 16 are the independent claims. Favorable reconsideration is respectfully requested.

In the Office Action, claims 6-8 were rejected under 35 U.S.C. §101 as allegedly not being limited to statutory subject matter. Specifically, the Office Action asserts that the invention recited in these claims "is not limited to tangible embodiments (e.g., signal)."

Applicants respectfully traverse this rejection. Claim 6 recites a signal including the packet formed by the method of claim 1, claim 7 recites a storage device for storing the signal of claim 6, and claim 8 recites a receiver for receiving the signal of claim 6. Applicants note first that each of these claims is directed to a "tangible" embodiment. A signal is tangible, even if it cannot be held in human hands, because it can be detected, stored, processed, input, output and otherwise manipulated in a specified way to produce a consequent result. A storage device and a receiver are also tangible, even in the most limited sense of the word, in that they can be held in human hands.

Moreover, Applicants note the recently-decided case of Ex parte Lundgren, 76 U.S.P.Q.2d 1385 (BPAI 2005) (a copy of which is attached hereto as Exhibit A), which removed previously applied limitations on the required "tangibility" of certain claims. In view of this decision, Applicants respectfully submit that claims 6-8 recite statutory subject matter, and the Examiner is respectfully requested to withdraw this rejection.

In the Office Action, claims 1, 2, 6-11, 15-17, 21-26 and 30 were rejected as being obvious over U.S. Patent 6,738,639 to Gossselin in view of U.S. Patent No. 6,553,002 to Bremer

et al. Claims 3-5 and 18-20 were rejected over Gosselin and Bremer et al. further in view of U.S. Patent No. 5,999,179 to Kekic et al. Claims 12-14 and 27-29 were rejected as being obvious over Gosselin and Bremer et al. in view of U.S. Patent No. 6,628,610 to Waclawsky et al.

Applicants respectfully traverse these rejections. Applicants have amended independent claim 1 to clarify a feature that was already present in independent claim 16, and submit that independent claims 1 and 16, together with the remaining claims respectively dependent thereon, are patentably distinct from the cited prior art for the following reasons.

The present Office Action repeats the citation of Gosselin as the primary reference. Applicants will first discuss the problem solved by the present invention, and will then contrast the disclosure of Gosselin with the present claims in detail.

The pending claims are directed to an SNMP Group Management embodiment described in the present specification in paragraphs [0087]-[0089] and [00105] et seq. As described therein, a human manager at a manager node 212 decides how to organize the router nodes 230 into groups, and then **manually** designates each group and selects identified router nodes 230 for each group **by manual input** [0087]-[0088]. For SNMP, the manager node 212 stores a list of all router nodes 230 in each group [0089].

SNMP requires that each router node 230 have a return path 204 to the "source of information," which here is the manager node 212, to enable acknowledging receipt of a message [00106]. Sometimes, the human operator may wish to send the same message to plural nodes. The present specification expressly notes that:

> As can be appreciated, it can be quite tedious for the operator to perform separate manual input for issuing commands to plural nodes, when each of the plural nodes is to receive the same set of commands. The division of the nodes into groups and subgroups simplifies this task for the operator." [00107]

The process is illustrated in the flowchart of Fig. 7. In step S100, the **operator** defines the groups, in step S102, the **operator** defines a set of commands to be executed by each node in a selected group, and in step S104 the **operator** specifies that group [00108]-[00110]. Then in steps S106-S110 the **manager node 212** generates a series of packets, each with the IP address of **one** of the router nodes 230 in the group, and sends out the packets [00112]-[00113]. In step S112, the manager node 212 looks for an acknowledgement from the router nodes 230 on their respective return paths [00114].

To summarize, the *source* of the packets, i.e., the manager node 212, receives a specification **from the human operator** to send a message to a group of nodes, where this specification designates the particular group **and does not specify any particular node of the particular group**. Thus, this specification uses a form of group control. Then, the source transmits a packet with an address corresponding to **one given node, but not the other nodes**, of the particular group. Thus, the given node is addressed by the source using a *unicast* address.

As shown above, independent claim 1 has been amended to more clearly recite the step of:

> "receiving a specification <u>at a source</u> to send a set of one or more messages from the source to the particular group of nodes, the specification designating the particular group and not specifying any particular node of the particular group"

Independent claim 16, which is directed to the source itself, already recited the reception of this specification.

In the Office Action, the Examiner correctly noted that the pending claims do not recite the "star" structure of nodes in which the present invention is particularly advantageous and in which Gosselin's system is disadvantageous (Office Action, paragraphs 33 and 36). Applicants agree that the claims are not so limited, but note that the non-obviousness of an invention may be

reflected in the problems that are not even recognized, let alone solved, by the prior art. This will be further addressed below.

Applicants will now discuss the disclosure of Gosselin.

In the embodiment of Fig. 1, Gosselin teaches a network including a mobile switching center ("MSC") 50, which is a source of messages. The MSC 50 is connected to a plurality of routers 90. Each router 90 is connected, either directly or through another router 90, to a plurality of base stations 30. *See* col. 4, line 47-co. 5, line 44. In general, such MSCs form the interface between such base stations and backbone networks, such as the PSTN, ISDN etc. (col. 1, lines 40-45). That is, the MSC does not originate any messages or decide who shall receive the messages. Presumably at some point a human operator decides these things, but Gosselin does not say. In any event, the MSC is described only as controlling the switching/addressing to get the input messages where they are supposed to go.

In Gosselin, the MSC 50 can communicate messages to the base stations 30 using either a Unicast communication scheme or a Multicast communication scheme. It is important to keep these schemes separate, for they operate in completely distinct ways.

In Gosselin's Unicast communication scheme, each base station 30 is given its own physical host address that uniquely identifies that base station (col. 5, lines 18-22). The MSC 50 communicates with a particular base station 30 by sending out a message containing that base station's home address, i.e., a *unicast* addresss (col. 5, lines 22-25). Each base station 30 includes a network interface 20 that blocks any message that does not contain the respective home address, and therefore the message will be detected *only* by the intended base station 30 (col. 5, lines 25-33).

The routers 90 are provided to handle the situation where separate groups of the base stations 30 are located on physically separate subnetworks (col. 5, lines 34-44; Fig. 1). If the intended base station 30 is on a first subnetwork, there is no need to send the message to the other subnetworks. Therefore, as shown in Fig. 1, the router 90 connected directly to the MSC 50 can forward the message either to its own subnetwork (if that is where the intended base station is) or can forward the message over a connection 100 to another router 90, which then forwards the message to its subnetwork (if that is where the intended base station is) (col. 5, lines 44-52).

Gosselin states the Unicast communication scheme performs adequately when the MSC 50 communicates with a single base station 30 (col. 5, lines 53-56). However, Gosselin further states that the Unicast communication system becomes inefficient when the MSC 50 must communicate the *same* signaling information to a plurality of base stations. Gosselin states (col. 5, lines 59-63):

> "The inefficiencies are primarily caused by the fact that the mobile switching center 50 must replicate the signaling information and individually address the communication to each of the plurality of base stations."

It is important to note that in its **Unicast** scheme, Gosselin does **not** state how the MSC 50 is instructed to communicate the *same* signaling information to a plurality of base stations. Of particular relevance here, there is no disclosure of any human operator or how the decision to send the same signaling information to a plurality of base stations is made.

Instead, Gosselin's choice of how to address this problem is to propose a Multicast communication scheme, which initially orders the base stations 30 into multicast groups. Each group includes base stations 30 to which the MSC 50 frequently communicates the same or related signaling information. In the embodiment of Fig. 1, four such groups are formed: three

for Location Areas LA1-LA3 and one for a Service Area 15 (col. 6, lines 20-42). A multicast group address then is assigned to each group (col. 6, lines 43-47). These are not permanent physical addresses, but rather are logical addresses used to identify a particular communication session between the MSC 50 and the base stations of each group (col. 6, line 47-col. 7, line 2).

Before any such messages can be sent, however, the MSC 50 in Gosselin must send a signal to each base station 30 to configure the respective network interface 20 to detect multicast messages (col. 7, lines 4-20). After this, the MSC 50 can send a single multicast message to a multicast group on the same subnetwork using the multicast address (col. 7, lines 20-29).

On the other hand, if the MSC 50 and the base stations 30 in the intended group are on different subnetworks, the routers 90 must also be configured with multicast routing capabilities (col. 7, lines 30-36). For this purpose, Gosselin expressly describes that IGMP is used (col. 7, lines 41-58):

> "In accordance with this embodiment, the signaling command from the mobile switching center 50 to the base stations 30 within a multicast group also instructs the base stations 30 to perform an IGMP "request to join" procedure. This "request to join" procedure basically informs the base station's associated router 90 that there exists a multicast group member having a specified multicast group address on the router's subnetwork. The associated router 90 then updates its routing tables and informs its neighboring routers 90 of the current state of the network from the associated router's point of view. The neighboring routers 90 update their routing tables and inform their neighboring routers 90 and so on until the information regarding multicast group membership is eventually propagated to all routers 90 within the mobile switching center's Service Area."

According to IGMP, each router attached to a subnetwork periodically polls the nodes on the attached subnetwork to ask the nodes to advise of all multicast groups to which they are currently subscribed. The nodes respond and the router uses such responses to update its routing table. Also, according to IGMP, the routers communicate with each other so that routers that are connected to each other can store in their multicast tables sufficient information for indicating

when a multicast packet should be outputted from one router to the next. Such inter-router communication is required to ensure that routers will forward multicast packets to other routers that attach subnetworks containing nodes subscribed to various multicast groups.

It is readily apparent that nodes that support multicast communication, and its supporting management protocol IGMP, are "chatty" -- the nodes must communicate with each other frequently to ensure that multicast communication can be achieved. Such chattiness uses up some communication bandwidth. Also, there is a presumption that the routers can easily communicate with one another. Finally, some memory is required at each router to store the routing table.

Thus, Gosselin proposes two communication schemes. In the first *Unicast* scheme, each base station 30 is handled individually, with the MSC 50 being responsive to an undisclosed instruction from the PSTN or ISDN to send a message to individual base stations 30 using *unicast* addresses. In the second *Multicast* scheme, the base stations 30 are handled in groups, with the MSC 50 organizing the base stations into groups *prior* to any messages being sent, and responding to another undisclosed instruction from the PSTN or ISDN to send a group message to a group of base stations 30 using the group's *multicast* address.

Applicants hope that the above discussion of the present independent claims 1 and 16 contrasted with Gosselin make clear the distinctions of the claims from Gosselin's disclosure. Thus, as recited in the present claims, the *source* (e.g., a MSC as in Gosselin) receives a specification to send a message to a group of nodes including a given node, where this specification designates the particular group **and does not specify any particular node of the particular group**. Thus, this specification uses a form of group control. Then, the source transmits a packet with an address corresponding to the **given node, but not the other nodes**, of

the particular group. In the claims, the given node (e.g., a base station as in Gosselin) is addressed by the source using a *unicast* address.

Thus, the present invention as defined in claims 1 and 16 does not reside merely in the use of unicast addressing, but rather more broadly provides the advantages of group control in combination with unicast addressing. Applicants submit that this is neither taught nor suggested in Gosselin.

Moreover, the present invention as defined in the pending claims provides these advantages *without* the structural limitations necessary in prior art source/node configurations such as in Gosselin. As described in Applicants' previous Amendment, Gosselin's technique is designed to work in a limited environment in which router or other control nodes are positioned between the source and the destination nodes. Applicants respectfully submit that the teachings of Gosselin are limited by the structure disclosed therein such that Gosselin's technique will be effective only in that type of structure. As noted above, Applicants are not arguing that a "star" structure is recited in the present claims; rather, Applicants are arguing that Gosselin appears to be unaware that any problems would arise if its system were used in such a structure, and therefore that it would not have been obvious that *any* modification in Gosselin should be made to overcome such problems.

Applicants further respectfully submit there is nothing in the disclosure of Gosselin that would teach or suggest to one of ordinary skill in the art why or in what way Gosselin's technique would be unworkable, how or why to redesign Gosselin's system without router nodes, or and how this problem could be resolved. Accordingly, Applicants submit that it would not have been obvious whether or how to modify Gosselin, such as by reference to any of the

other prior art cited in the Office Action, to use unicast addressing with group control, as defined in the pending claims.

The present invention as defined in the pending claims enables the human operator to communicate control messages to an entire group by enabling this operator to designate a whole group at once, rather than individually selecting each of multiple group members one at a time. That is, the invention uses unicasting in a novel way to still allow messaging to an entire group in a single, simple, less tedious operation.

As a further benefit, the claimed invention dispenses with the need for IGMP. Such a technique is not needed in applications where: (1) routers do not transfer replica copies of the message between each other until the message arrives at the subnetwork containing the destination; and (2) the destination nodes do not, themselves, determine whether or not they want to be part of a multicast group. Thus, the claimed invention provides the benefit of dispensing with the very "chatty" and memory intensive IGMP needed to support multicast communication. At least, none is needed to control the router nodes according to the claimed invention.

The other references cited in the Office Action are each directed to a form of unicast messaging. However, Applicants have not found any teaching or suggestion therein of communicating with a group of nodes by a manager node receiving the specification of a group, yet transmitting one unique copy of the message in unicast format to each member of the group from the manager node. In contrast, the present invention as defined in the pending claims, and in particular pending independent claims 1 and 16, has recognized the possibility of different topologies, has recognized the problems raised thereby, and has provided a novel, unobvious and advantageous solution.

In view of the above amendments and remarks, Applicants respectfully submit that claims 1-30 herein are patentably distinguished from the cited prior art.

Applicants respectfully submit that this application is now in condition for allowance. Accordingly, the Examiner is respectfully respected to allow claims 1-30 and to pass this case to issue.

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Applicants' undersigned attorney may be reached by telephone at (212) 969-3314 or by facsimile at (212) 969-2900. Please direct all correspondence to Customer No. 21890 at the address provided below.

Respectfully submitted

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Date: November 28, 2005

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